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NOTES AND NEWS

PROFESSOR E. A. KIRKPATRICK has called our attention to the erroneous printing of his name on page 477 of the issue of the JOURNAL for August 27. We desire to express our regrets for the error.

MR. FRANCIS DARWIN'S presidential address before the Dublin meeting of the British Association for the Advancement of Science is printed in full in the issue of *Nature* for September 3. It is a defense of the mnemonic conception of evolution. We take the following extracts from the address as illustrative of Mr. Darwin's views: "I want to give you a general idea of how the changes going on in the environment act as stimuli and compel plants to execute certain movements. Then I shall show that what is true of those temporary changes of shape we describe as movements is also true of the permanent alterations known as morphological. I shall insist that, if the study of movement includes the problem of stimulus and reaction, morphological change must be investigated from the same point of view. In fact, that these two departments of inquiry must be classed together, and this, as we shall see, has some important results—namely, that the dim beginnings of habit or unconscious memory that we find in the movements of plants and animals must find a place in morphology; and inasmuch as a striking instance of correlated morphological changes is to be found in the development of the adult from the ovum, I shall take this ontogenetic series and attempt to show you that here also something equivalent to memory or habit reigns. Many attempts have been made to connect in this way the phenomena of memory and inheritance, and I shall ask you to listen to one more such attempt, even though I am forced to appear as a champion of what some of you consider a lost cause—the doctrine of the inheritance of acquired characters. . . . Semon in his interesting book, 'Die Mneme,' has used the word *Engram* for the trace or record of a stimulus left on the organism. In this sense we may say that the internal conditions of Pfeffer, the physiological states of Jennings, and the internal conditions of Klebs are, broadly speaking, *Engrams*. The authors of these theories may perhaps object to this sweeping statement, but I venture to think it is broadly true. The fact that in some cases we recognize the chemical or physical character of the internal conditions does not by any means prevent our ascribing a *mnemic* memory-like character to them, since they remain causal agencies built up by external conditions which have, or may have, ceased to exist. Memory will be none the less memory when we know something of the chemistry and physics of its neural concomitant. . . . There is likely to be another objection to my assumption that a simple form of associated action occurs in plants—namely, that association implies consciousness. It is impossible to know whether or not plants are conscious; but it is consistent with the doctrine of continuity that in all living things there is something psychic, and if we accept this point of view we must believe that in plants there exists a faint copy of what we know as consciousness in ourselves. I am told by

psychologists that I must define my point of view. I am accused of occupying that unscientific position known as 'sitting on the fence.' It is said that, like other biologists, I try to pick out what suits my purpose from two opposite schools of thought—the psychological and the physiological. What I claim is that, as regards reaction to environment, a plant and a man must be placed in the same great class, in spite of the obvious fact that as regards complexity of behavior the difference between them is enormous. I am not a psychologist, and I am not bound to give an opinion as to how far the occurrence of definite actions in response to stimulus is a physiological and how far a psychological problem. I am told that I have no right to assume the neural series of changes to be the cause of the psychological series, though I am allowed to say that neural changes are the universal concomitants of psychological change. This seems to me, in my ignorance, an unsatisfactory position. I find myself obliged to believe that the mnemonic quality in all living things (which is proved to exist by direct experiment) must depend on the physical changes in protoplasm, and that it is therefore permissible to use these changes as a notation in which the phenomena of habit may be expressed. . . . If the mnemonic theory is compared with Weismann's views it is clear that it is strong precisely where these are weakest—namely, in giving a coherent theory of the rhythm of development. It also bears comparison with all theories in which the conception of determinants occurs. Why should we make elaborate theories of hypothetical determinants to account for the potentialities lying hidden in the germ-cell, and neglect the only determinants of the existence of which we have positive knowledge (though we do not know their precise nature)? We know positively that by making a dog sit up and then giving him a biscuit we build up something in his brain in consequence of which a biscuit becomes the stimulus to the act of sitting. The mnemonic theory assumes that the determinants of morphological change are of the same type as the structural alteration wrought in the dog's brain. . . . We may fix our eyes on phylogeny and regard the living world as a great chain of forms, each of which has learned something of which its predecessors were ignorant; or we may attend rather to ontogeny, where the lessons learned become in part automatic. But we must remember that the distinction between phylogeny and ontogeny is an artificial one, and that routine and acquisition are blended in life. The great engine of natural selection is taunted nowadays, as it was fifty years ago, with being merely a negative power. I venture to think that the mnemonic hypothesis of evolution makes the positive value of natural selection more obvious. If evolution is a process of drilling organisms into habits, the elimination of those that can not learn is an integral part of the process, and is no less real because it is carried out by a self-acting system. It is surely a positive gain to the harmony of the universe that the discordant strings should break. But natural selection does more than this; and just as a trainer insists on his performing dogs accommodating themselves to conditions of increasing complexity, so does natural selection pass on its pupils from one set of

conditions to other and more elaborate tests, insisting that they shall endlessly repeat what they have learned and forcing them to learn something new. Natural selection attains in a blind, mechanical way the ends gained by a human breeder; and by an extension of the same metaphor it may be said to have the power of a trainer—of an automatic master with endless patience and all time at his disposal.”

WE take the following comment on specialization in science from a notice in *The Athenæum* of Louis Houlléviqgue’s “L’évolution des sciences”: “Admirable as is his reasoning in this final chapter, we fear that the ideal there set forth is realizable only in Utopia, for the most marked feature of modern science (in the more restricted and popular sense of the word) is the resoluteness with which it applies itself to the bettering of the conditions of everyday life. But this can only be done, so to speak, piecemeal, and by the most careful attention to details; and it is this fact, rather than the perverseness of its professors, which has brought about, as it seems to us, the over-specialization which, as friends of abstract learning, we deplore.”

WE learn that Mr. T. M. Johnson, of Osceola, Mo., is collecting materials for a book on the writings of Thomas Taylor the Platonist. He will be glad to hear from those who have any of his works with manuscript notes or memoranda in his handwriting, or any of his letters or manuscripts.

THE *Revue de métaphysique et de morale* for September is devoted to a series of papers dealing with contemporary philosophy in countries other than France. Professor Frank Thilly, of Cornell University, has written the paper on philosophy in the United States of America. American philosophy is indebted to him for a very thorough and unbiased presentation of its current tendencies. The other contributions to the *Revue* are by J. Benrubi, J. S. Mackenzie, G. Amendola, H. Höffding, F. G. Calderon, who write of philosophy in Germany, England, Italy, Scandinavia, and South America.

THE death is announced, in his sixty-third year, of C. A. J. Fritz Schultze, professor of philosophy and pedagogics in the Technical High School of Dresden. His works include “Geschichte der Philosophie der Renaissance,” “Stammbuch der Philosophie,” “Philosophie der Naturwissenschaft,” “Kant und Darwin,” and “Psychologie der Tiere und Pflanzen.”

PROFESSOR R. M. WENLEY concludes in the *Popular Science Monthly* for September his articles on “The Movement towards ‘Physiological’ Psychology.” The final paper is chiefly an exposition of Professor Wundt’s views.

M. ANTOINE HENRI BECQUEREL, the eminent French physicist, died at the age of fifty-six years, on August 25, at Croisic, in Brittany. *Nature* for September 3 contains an account of his contributions to science.